North Carolina Department of Environment and Natural Resources

Division of Air Quality

Benzo(a)pyrene

CAS 50-32-8

Current North Carolina AAL = 3.3×10^{-5} mg/m^3 (annual carcinogen)

AAL Documentation

Inhalation Unit Risk[1] (IUR) = 3×10^{-3} per µg/m^3

The Inhalation Unit Risk Factor was divided by 10 to compensate for animal to human extrapolation.

$$\text{Modified IUR} = \frac{3 \times 10^{-3}}{10} = 3 \times 10^{-4} \text{ per } \mu g/m^3$$

Benzo(a)pyrene is classified as a probable human carcinogen by EPA, Group B2. In accordance with North Carolina guidelines, a 1 in 100,000 risk estimate was used to derive the AAL.

Linear Calculation

$$\frac{1}{3 \times 10^{-4} \text{ per } \mu g/m^3} = \frac{x}{1 \times 10^{-5}}$$

$$x = \frac{1 \times 10^{-5}}{3 \times 10^{-4}}$$

$$x = 3.3 \times 10^{-2} \ \mu g/m^3$$

AAL for Benzo(a)pyrene[2] = 3.3×10^{-5} mg/m^3

This information has been reconstructed using the decision matrix established by the North Carolina Academy of Sciences Air Toxics Panel, September, 1986.

Final version- June 2013 (CMP)

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[1] Clements Associates, 1985. Chemical, Physical and Biological Properties of Compounds Present at Hazardous Waste Sites. Estimated from an oral cancer slope factor of 11.5 (mg/kg-day)$^{-1}$ for benzo(a)pyrene listed under polycyclic aromatic hydrocarbons. Standard conversion assumptions of 20 m^3 daily breathing rate and 70 kg average body weight were used.

[2] 1 µg/m^3 = 10^{-3} mg/m^3